Lyme Disease Advisory Committee
Minutes of the April 27, 2001, Meeting
Department of Health Service, Sacramento

The third meeting of the Lyme Disease Advisory Committee (LDAC) was held on April 27, 2001, in Sacramento, California.

Committee members present:
Alan Barbour, M.D., University of California, Irvine
Jean Hubbard, Lyme Disease Resource Center
Vicki Kramer, Ph.D., California Department of Health Services
Robert Lane, Ph.D., University of California, Berkeley
Lee Lull, Lyme Disease Support Network
Susie Merrill, Lyme Disease Support Network
Scott Morrow, M.D., California Conference of Local Health Officers
Christian Parlier, Lyme Disease Support Network
Raphael Stricker, M.D., California Medical Association

Guests:
Lucia Hui, California Department of Health Services
Anne Kjemtrup, D.V.M., Ph.D., California Department of Health Services
Jim Tucker, California Department of Health Services
Lynn Shepler, MD, JD

1. Introductions and General Discussion

Dr. Lane, Chair, called the meeting to order at 10:00 a.m. He asked that the Committee members and attendees introduce themselves. Dr. Lane noted that Dr. Shepler had asked to observe today and welcomed her to the meeting. He commented that the committee had not discussed policy on whether the meetings should be open or closed and suggested such a discussion for the end of the meeting. Dr. Barbour attended the meeting via speaker-phone.

Before the minutes of the previous meeting were discussed, Dr. Barbour requested that the committee review some specific points he hoped members could accept as starting points for LDAC input into the California Department of Health Services' (DHS) Lyme disease education program. He hoped this would avoid early discussion of more controversial issues that might be polarizing and interfere with the committee's effectiveness. These points had been emailed to Dr. Kjemtrup prior to meeting and were distributed to the committee. Dr. Barbour's points were:

1) *Borrelia burgdorferi* infection of humans does occur in California. This is best documented in northern California, but there is increasing evidence that there is a risk of Lyme disease in southern California as well.

2) California physicians are not as aware of the risk of *B. burdorferi* infection and other tick-borne infections as they should be.

3) California physicians and other health care workers are not familiar with the different types of ticks that occur in California and the infections that they carry.

4) California physicians and other health care workers are not as knowledgeable about prevention of tick bites and management of tick bites as they should be.

5) There is incomplete information about the risk of Lyme disease (or a similar infection) from the non-*Borrelia burgdorferi* species that have been found in ticks in California, especially in southern California. Dr. Barbour felt that we needed to urge further and more intense studies of these and other *Borrelia* species in California as a whole, but especially in southern California.

Dr. Morrow noted that these points are similar to our current direction, as expressed in the Committee's goals.

Ms. Hubbard strongly supported Dr. Barbour's general strategy of focusing first on education and points that we already agreed on. However, she noted that although she too wished we could postpone discussing treatment issues, she felt this impossible because DHS had recently been publicly addressing treatment issues in a manner that had raised her own and other patients' concerns. She also argued that the Committee should eventually discuss all controversies about Lyme disease, including treatment controversies. Mr. Parlier reminded the Committee that a goal addressing Lyme controversies, including treatment issues was established in the 18-month column. Ms. Lull observed that the bill does say the Committee can advise as to content, and general discussion verified that the language of the bill confirms that the content of educational efforts and materials, including treatment recommendations, can be addressed by the Committee, e.g., in the context of providing information to the medical community.

A question was raised about the status of the clinical controversies' manuscript mentioned at previous meetings and written by Drs. Fritz and Vugia of DHS. Dr. Kjemtrup gave an update to the Committee that the article has been submitted for peer review to a journal. A statement suggesting that the Committee had recommended publication of this particular article had been removed from the goal matrix because discussion with Committee members after the last meeting clarified that most Committee members had not reviewed it and therefore could not recommend its publication. If published, the Committee can review it and discuss whether they would like to incorporate the article, or parts thereof, into an education program for broader distribution in California.

Discussion progressed to wording that was used in DHS' last press release. In the release dated April 24, 2001, the word "rare" was used to describe the incidence of Lyme disease in California. After its release, Ms. Lull sent an email to Committee members pointing out that DHS' use of the word "rare" undermines the one goal the Committee had agreed was most urgent: encouraging physicians to learn how to recognize and diagnose Lyme disease. She observed that many physicians interpret "rare" as "non-existent," and tell their patients that Lyme disease does not exist here. She felt that in general, busy physicians may not investigate further a disease DHS considers rare. Dr. Kramer responded that "rare" was used in context of comparing the incidence of Lyme disease with the incidence of other infectious diseases that DHS is

concerned with such as AIDS and tuberculosis. "Rare" refers to the reported Lyme disease cases in California, for example just over 100 cases reported last year in this state of over 33,000,000 people. Dr. Morrow observed that in light of problems with reporting mechanisms in California, it is difficult to assess the actual prevalence of the disease based on reported cases. Dr. Morrow expressed the hope that over time, as the new database gathers information on cases that do not meet the surveillance case criteria, better estimates may be obtained.

Dr. Lane agreed with Ms. Lull's point that use of the word "rare" might deter physicians from giving attention to the disease. He added that it is important to be sensitive about implications of prevalence, particularly in areas where there is locally high occurrence of Lyme disease. He gave an example from a northwest coastal county where his group studied a community in which 24 percent of the residents were seropositive to *B. burgdorferi* and 37 percent of the residents were physician-diagnosed with probable Lyme disease. He suggested an alternative approach to describe the incidence of Lyme disease in California might be on the order of, "Although a rare disease overall, locally and regionally there can be high risk." Ms. Hubbard noted that case report statistics can't tell us how common or uncommon the disease actually is in our state until California physicians learn enough to recognize and report the disease and reiterated that they won't bother to learn if DHS tells them the disease is rare. She also observed that Dr. Lane's research using tick-saliva antibodies suggests that more than one-third of San Francisco Bay Area residents have been bitten by *Ixodes pacificus* ticks, indicating that the risk for Californians is more than a purely regional problem. (In the study, antibodies to *Ixodes pacificus* tick saliva were found in 79% of residents of a rural Ukiah community, 36% of blood samples from San Francisco Bay Area residents, and 6% of Imperial County residents.)

Dr. Barbour agreed with Dr. Lane's idea of stressing that in certain geographic areas it's certainly not rare. He also suggested that in general it might be more appropriate to compare the incidence of Lyme disease to the incidence of other better known but even rarer diseases such as meningococcal meningitis or whooping cough. He noted that all three in some sense are uncommon if you compare them to AIDS or tuberculosis but due to their large impact, people need to be aware of them. He added that it is important that physicians not miss the diagnosis of Lyme disease and they can not afford to send someone home from a clinic or emergency room if they missed the diagnosis.

There was general agreement that media contact needs to emphasize that there can be moderate to high local risk. It was reiterated that press releases regarding Lyme and other tick-borne diseases need to be released at least two times per year. Dr. Kramer stated that future DHS press releases and educational literature on Lyme disease would not describe the disease as "rare."

2. Review Minutes of January 10, 2001 (approved April 16, 2001)

Minutes of the first two meetings of the LDAC were written by Dr. Kjemtrup, LDAC coordinator, and then disseminated for review and comment to all members via email.

All members approved the minutes of the January 10 meeting on April 16. Ms. Hubbard volunteered to record the minutes of future LDAC meetings. She felt that the minutes are a very important product of the meetings, and, as a representative of patients, she could efficiently emphasize the issues discussed in the LDAC meetings that most affected them. Dr. Kramer felt that the process seemed to be working well now, and that the writing up of the LDAC minutes is part of Dr. Kjemtrup's job responsibilities as LDAC coordinator. Dr. Kjemtrup serves as an effective "point person" to coordinate the revision and approval process. It was agreed that it was important that the Committee arrive at a consensus of the final version of the minutes. Mr. Parlier noted that it has been time-consuming to compare versions of the minutes during the approval process because it was not immediately obvious where the changes were made. A suggestion was made to send updated versions of the minutes containing changes made by LDAC members to the entire Committee during the review process using the editing function so that changes would be obvious. In addition, all email exchanges regarding the minutes should be sent to the entire Committee. A motion was made, seconded and passed to continue the minute taking as before, with the addition of highlighting changes and increasing communication between the members, with the effectiveness of this process to be reviewed at the next meeting.

Dr. Lane indicated that the minutes had already been approved by the email process, but asked if there was any additional discussion. There were no further comments. A motion to formally approve the minutes of the January 10, 2001, meeting was made, seconded, and passed.

3. Review of the LDAC Mission Statement

Dr. Lane read the mission statement finalized at the last meeting and asked if there were any comments on the statement. No comments were offered.

> The mission of the Lyme Disease Advisory Committee is to make recommendations to the California Department of Health Services on strategies to enhance the awareness of the public and the medical community about Lyme disease in California, and thereby reduce exposure to, and suffering from, this and other tick-borne diseases.

4. DHS Progress Report: Review and Discussion

Dr. Kjemtrup provided a progress report using overheads to describe DHS activities from January through April of this year relating to Lyme disease education.

Under physician education, Dr. Kjemtrup reported that she had made a presentation at the Center for Health Services seminar series at the University of California, Davis Medical Center entitled "Lyme disease in California: assessing and improving physician knowledge." The purpose of this seminar was to get input from clinical and research physicians on the questionnaire that she is developing. The purpose of the questionnaire is to assess current physician awareness and knowledge of Lyme disease in California and thus identify appropriate intervention strategies. A

questionnaire administered at the beginning of an education program can also help assess the success of an intervention strategy after implementation. Dr. Kjemtrup is currently preparing a brief paragraph on Lyme disease for the California Medical Board's Action report. This paragraph will be submitted for a mid-August deadline for the October newsletter (in time for adult tick season!). Dr. Kjemtrup then passed out the first version of the physician questionnaire for the Committee to comment on. She asked that written comments from the Committee be returned in one month for incorporation into the questionnaire.

Several presentations were made to public groups and agencies. At the Wildlife Society Lyme Disease Symposium on February 23, Dr. Kjemtrup made a presentation "Lyme disease in California and the Lyme Disease Advisory Committee." Dr. Fritz made a presentation "*Borrelia burgdorferi* vaccine: A shot in the arm for Lyme disease prevention?" Two all day tick-borne disease workshops for local vector control agencies were presented on February 28 and March 1 in Los Angeles and Vacaville, respectively. Dr. Joseph Piesman from the Centers for Disease Control and Prevention was the keynote speaker, and personnel from the Vector-Borne Disease Section (VBDS) made presentations on Lyme disease, the LDAC, ehrlichiosis, relapsing fever, Rocky Mountain spotted fever, tick control, and tick-bite prevention. On March 15, Ms. Lucia Hui made a presentation to the Oak Conservation Working Group/University of California Cooperative Extension Richmond Forest department entitled "Lyme disease in California." On March 22, Anne Kjemtrup gave four presentations to the Grass Valley Irrigation District at their safety meetings, entitled "Prevention of Lyme and other tick-borne diseases in California."

April 7 marked the opening of DHS's new laboratory facility in Richmond, California. Although VBDS will not have a laboratory facility there until approximately September 2002, we did have an informational poster at the laboratory opening that displayed VBDS' disease prevention activities. The Lyme disease prevention portion included a display of live *Ixodes pacificus* ticks and discussion on prevalence of Lyme disease in California and prevention of tick bites.

In the past month DHS had several media contacts. On April 14, the California Report (KQED) was aired on National Public Radio. The reporter, Tamara Keith, aired interviews with both Dr. Stricker and Dr. Barbour. She had also interviewed Dr. Kjemtrup whose information was apparently used as background material. The Union Paper of Nevada County published a brief article on Lyme disease in the Sierra foothills and used DHS information provided by Dr. Kjemtrup. The San Francisco Chronicle also published a tick-borne disease alert article (April 29), again using DHS prevention information provided by Dr. Kjemtrup. Dr. Kjemtrup gave two radio interviews on tick awareness to KNIX in Los Angeles and KCBS in San Francisco, on April 23, apparently in response to the DHS tick-borne disease press release of April 24. Ms. Hubbard wondered if the interviews were primarily on tick awareness and Dr. Kjemtrup replied that the major thrust of the interviews was indeed awareness of tick activity. Dr. Kramer provided a television interview with KCRA TV3 in Sacramento that aired on the evening news. Dr. Fritz provided information to a Santa Cruz Sentinel newspaper reporter for an article (published April 30).

Under the "Educate General Public" category, Dr. Kjemtrup is currently preparing an update on Lyme disease to be published in the California Public Health Update (formerly the California Morbidity) based on her talk given at the Wildlife Disease Society meeting. She also has prepared a draft of the new Lyme disease information brochure. She requested that Committee members carefully look at the brochure and send her comments on it by mid-June. Comments will be incorporated to the extent possible, and a second draft will be sent to the Committee for consideration at the next meeting.

As part of VBDS' mission to educate public organizations, VBDS personnel gave presentations to several agencies between January and April. On January 23, Dr. Kramer gave a presentation to the Mosquito and Vector Control Association of California (MVCAC): "Lyme disease and the Lyme Disease Advisory Committee." On March 14, one of the Sacramento biologists, Dr. Mark Novak, gave a presentation to the staff at Carnegie State Park, Off Road Vehicle Association entitled "Tick-Borne Diseases in California." Mr. James Tucker gave a presentation on April 2 to the California Environmental Health Association conference entitled "Tick-Borne Diseases in California."

Dr. Kjemtrup then recounted recent DHS activities related to tick-borne disease prevention. On February 14, as part of a relapsing fever case investigation, VBDS personnel from the Sacramento field office surveyed for *Ornithodoros* ticks at a residence in King's Beach, Placer County. VBDS personnel from the Redding field office have a continuing tick surveillance and identification project in Modoc and Lassen counties.

Ms. Hui reported on tick surveillance activities that she is coordinating. VBDS maintains a database of tick collections and ticks tested for the *Borrelia* agent. Local vector-control agencies and DHS contribute to this database. Ms. Hui prepares monthly reports from this database. Collaboration is also ongoing with the U.S. Army Center for Health Promotion and Preventive Medicine and the Rocky Mountain Laboratory (National Institutes of Allergy and Infectious Diseases) to characterize *Borrelia* spp. from *I. pacificus* ticks collected at Los Padres National Forest. Ms. Hui sent 1,200 ticks from southern California to the U.S. Army for testing in 2000. In one pool from the Los Padres National Forest, a *Borrelia* species not typical of the *Borrelia burgdorferi* complex was recovered from *Ixodes pacificus*. Characterization of the agent is continuing. Ms. Hui mentioned that an article has recently been published by Glen Scoles et al., in the new Journal "Vector-Borne and Zoonotic Diseases," that describes an atypical *Borrelia, Borrelia miyamotoi*, recovered from *Ixodes scapularis* ticks from Connecticut, Rhode Island, New York, and New Jersey. Work by the U.S. Army on the agent recovered from *I. pacificus* ticks from the Los Padres National Forest is continuing. The zoonotic implications (e.g., ability for this organism to infect humans) are unknown at this time.

Ms. Hui emails out a monthly bulletin on tick surveillance and offered to send the bulletin to interested Committee members. Dr. Morrow brought up the point that it

would be helpful if the tick-testing data could be sent to physicians, particularly those in areas where *Borrelia burgdorferi* positive ticks have been recovered. Ms. Hui noted that the database consists of ticks tested in multiple laboratories, by multiple methods, and therefore a summary statement would be required in order to interpret the data. She also noted that VBDS does not perform surveillance in all parts of all counties. The extent of VBDS surveillance for *B. burgdorferi* in ticks consists of testing primarily adult ticks from various counties and once positive ticks are identified in a county, no more testing is performed by VBDS. Local agencies in those counties are made aware of any positive ticks found in their jurisdiction and it is up to them to pursue further testing. Thus, VBDS can really only supply a map of infected adult ticks at the county level (e.g., a *B. burgorferi* positive tick found in a certain county results in that entire county being labeled as "positive"), not at local levels. Such a map, therefore, decreases the emphasis on local risk, particularly since nymphal ticks are not tested. Ms. Hubbard and Dr. Morrow felt that any information regarding infectivity of *I. pacificus* ticks in California would be important to post on the VBDS web site to let physicians know that *B. burgdorferi* infected ticks are found in California and to encourage further research at the county level.

Dr. Morrow asked if there was a strategy to inform various agencies about *Borrelia* prevalence in ticks. Dr. Kramer responded that both formal (e.g., reports to the U.S. Forest service and monthly bulletins) and informal (e.g., biologists contact agencies in their areas) routes are used to inform affected agencies. VBDS biologists will contact local and state parks in areas where positive ticks are found, provide tick warning posters and brochures, and offer to give educational talks. Local vector control districts also use the DHS tick warning posters.

Dr. Kjemtrup continued her report. VBDS has several ongoing collaborative studies with Dr. Lane at U.C. Berkeley. These projects include:

- The study of *Borrelia* spp. of woodrats and ticks in Inyo National Forest, Inyo County.
- Personnel support for a study on the ecology of nymphal *I. pacificus* ticks in Mendocino County.
- Facilitation of erythema migrans biopsy collection from humans to characterize *Borrelia* spp. infecting humans.

Dr. Kjemtrup reported that VBDS is developing a program to test *I. pacificus* ticks. The primary purpose of this project is to attempt to identify *Borrelia* organisms in ticks from southern California. Since the goal of this project is to identify both *Borrelia burgdorferi sensu lato* and *sensu stricto*, the direct fluorescent antibody (DFA) test is used to test ticks. This approach is used because the DFA identifies a broad range of *Borrelia* species. This project also serves to develop in-house tick-testing techniques.

Finally, an ongoing collaboration is being maintained with Sacramento-Yolo Mosquito and Vector Control District on tick-borne disease surveillance and study site-development in Yolo County.

5. Revisit Goal Matrix

Pertaining to the 12-month Disease Prevention Square that discusses funding for Lyme disease education, Dr. Kramer reported on a Budget Augmentation Proposal sponsored by the Mosquito and Vector Control Association of California to enhance mosquito-borne disease surveillance in California. This effort is due, in part, to the detection and subsequent outbreaks of West Nile virus in the eastern United States. Legislative funding of $3.4 million is being requested, a portion of which would be allocated to the University of California Mosquito Research Program to allow for potential expansion of research to non-mosquito vectors. Unfortunately, the energy crisis has diminished the likelihood that this increased funding for research on vector-borne diseases will be approved. It was asked if DHS could pursue funding for Lyme Disease Education specifically. Dr. Kramer replied that we have not had time to explore this yet, but that it is one of our goals.

Continuing on Disease Prevention, the question was posed as to why "Enhance public knowledge on tick-borne diseases and tick control" was under the three-year time frame if indeed this is what we are doing now. Dr. Kramer replied that the goal was there because hopefully we will be able to measure our success at increasing public awareness through the use of the California Behavioral Risk Assessment questionnaire. In 2000, questions on tick awareness were included in the telephone interview that targets 5,000 Californians (refer to the last meeting's minutes that lists the questions). This should serve as a base-line measure. It cannot be determined from that survey how many of the respondents are physicians.

Under Risk Assessment, the six-month goal mentions the formation of a *Borrelia* diversity working group. It was asked if the LDAC can have updates on that working group. Dr. Kjemtrup replied that indeed that was possible, however, the group has not convened since their first discussion session last October.

The issue of providing tick-infectivity data was revisited. It was suggested that, at a minimum, a county-level map depicting the counties where positive ticks have been found would be a useful awareness tool. Dr. Barbour wondered what laboratory technique was used, particularly for the fluorescent antibody tests? Dr. Kjemtrup replied that the indirect fluorescent antibody test using monoclonal antibodies specific for *B. burgdorferi* was the primary method used for testing the ticks. Thus, such a county map can only reflect tick-infection with *B. burdorferi*. It was suggested that a similar map be made available for nymphal ticks. Dr. Kjemtrup pointed out that, unfortunately, there is little information on nympal infection rates in most regions of California. The Committee recommended that the county map showing the distribution of adult positive *I. pacificus* be placed on the VBDS web site. There was discussion about the importance of finding a way to make whatever nymphal tick infection data are available more accessible to the public and physicians because nymphal infection rates can be substantially higher than infection rates in adult ticks. In some areas of California, the nymphal *Borrelia* infection rate can be comparable to those found in the northeastern states. In addition, it was recommended that the number of ticks tested and the locality from whence they originated be put in the VBDS Annual Report. DHS will follow-up on this recommendation.

Ms. Hubbard wondered about the feasibility of instituting serological studies of dogs as sentinels for *Borrelia burgdorferi* infection in specific areas since this seems to work well in other areas of the country and the world. Dr. Kjemtrup replied that such studies are in the literature. However, effective tick repellents are often used on domestic canines, particularly in areas of known risk of tick bites, and, in addition, these same dogs are often vaccinated with the canine Lyme disease vaccine. Thus, although it is possible to differentiate naturally-infected and vaccinated dogs, due to the factors mentioned above, canine surveillance for Lyme disease probably would not be a cost-effective approach to human surveillance.

Dr. Kjemtrup reported that the database on Lyme disease cases reported to DHS is being maintained and updated regularly. In 2000, a total of 104 cases were reported and 95 of these (91%) fit the case definition. Dr. Morrow pointed out that a prescreening actually occurs at the county level so that cases that do not meet the CDC Lyme disease criteria are not reported to the state. He also pointed out that the case reporting form is long and therefore physicians may simply not report cases because of the time involved. Ms. Lull pointed out that physicians are afraid to diagnose or report Lyme disease due to a perception that they may be targeted for investigation.
Dr. Kramer replied that it is not the function of DHS to investigate physicians and that DHS has, to her knowledge, never done so in regard Lyme disease. Ms. Lull also asked how physicians find out if the cases they report are counted or not. Dr. Kjemtrup replied that physicians are not informed if the cases they report are counted or not. The reporting process operates by the physician giving a report to the county health departments, and then the county passes the reports to DHS where they are evaluated. It was pointed out that some physicians might stop reporting cases if they feel that their cases do not fit the case definition. Dr. Morrow stated that Lyme disease reporting based on laboratory testing would be a more comprehensive manner in which to assess Lyme disease cases in the state.

Ms. Lull introduced a document generated by Lyme disease support groups entitled "High Hopes from the CA Lyme Disease Support Groups." This document indicated two major reasons why early diagnosis and treatment of Lyme disease are often not possible in California: 1) lack of awareness by physicians that Lyme disease exists in California, and 2) fear in the physician community that if they treat Lyme patients, they may be harassed by insurance companies or medical boards. In addition, seven points were made that support groups hope will be addressed in a state-sponsored Lyme disease education program. Dr. Lane stated that this was an important document and, as such, should be placed as a separate agenda item for the next meeting. The Committee agreed.

Dr. Morrow pointed out that tick-testing by public health labs serves as an effective vehicle for public education. He was concerned that this goal was removed from the 18-month risk-assessment area. He moved that this goal be reinstated on the matrix; the motion was seconded and approved by the Committee.

6. Discussion on Meeting Policies

In a closed session, the pros and cons of open versus closed meetings of the LDAC were discussed.

The points in favor of closed meetings included:

- Members would feel at greater liberty to share personal thoughts in a closed meeting. For example, with the current free discussion, a member may make a statement that is then countered by another member. The first member may then wish to retract the initial statement.
- Some members currently share unpublished data during the meeting, and can review how the information is presented before it is placed in the public minutes. In an open meeting, they could not share unpublished data, aware that there is a possibility that it could be misinterpreted.
- There is a decreased possibility for a mis-quote or misunderstanding in closed meetings since members currently have the ability to review their comments in the minutes before they are made public.
- A large audience may take the LDAC off course of issues that can be most effectively focused on in a closed session.
- To the extent that having an audience inhibited free discussion at the meetings themselves, members with similar backgrounds might form subgroups and interact behind the scenes rather than in full discussions among all members, thus losing the power of LDAC members' diversity.
- LDAC meetings are not required by law or statute to be open, based on a preliminary analysis by the DHS Office of Legal Affairs.

The points in favor of an open meeting included:

- There is public interest to attend.
- LDAC members favor public information dissemination about the issues discussed.
- If people attending were not allowed to comment during the meeting, then distraction potentially offered by the public would be minimal.

The majority of members preferred closed meetings if they are legal. A final decision on this matter was referred to DHS upper management. Posting the minutes on the DHS web site was agreed to by the Committee.

The meeting was adjourned at 3:40.

Goals that the Lyme Disease Advisory Committee Would Like to See DHS Address
April 27, 2001

Goal Area	6 months	12 months	18 months	2 years	3 years	4 years
Educate Medical Community	▪ Submit articles to physician journals and newsletters (*in progress*)	▪ Assess physician awareness on LD in California -develop questionnaire (*will continue into future months*) ▪ Assess laboratory methods used in California -develop questionnaire to address methods used and the percentage of tests positive	▪ Hold periodic tick-borne conferences ▪ Encourage ongoing physician education: -Design educational material for medical community (seminars, newsletters, CMA/CCLHO) -Design direct mailings to physicians of Lyme disease educational/informational material, including myriad of symptoms that occur ▪ Develop paper on controversies addressing: -Current tests do not rule out Lyme Disease -Latency and relapse occur -Long-term treatment controversies	▪ Conduct follow-up assessment on California physician knowledge, awareness on Lyme disease in CA (2-3 year goal) -at least 5% of providers recognize, can diagnose and treat LD -physician and public awareness are comparable, and much greater than at present		
Educate General Public	▪ Update brochure (*in progress*) ▪ Establish communication network and information clearinghouse (*in progress*) ▪ Target high risk groups for presentations (*on-going*) ▪ Collaborate with local vector control districts to: - coordinate public services - develop media contacts, educational materials within their jurisdiction (*on-going*)	▪ Develop PSA's (public service announcements) for radio ▪ Contact press, initiate informative press releases on LD at least twice per year ▪ Provide consultation to and collaborate with LD support groups to facilitate public education (*on-going*)	▪ Develop Lyme Disease compendium that explains DHS's role (may extend to 2 years) ▪ Perform a behavioral risk assessment by incorporating questions on Lyme disease in the California Behavioral Risk Factor Study to help develop a public awareness campaign based on documented needs. (*in progess*)	▪ Post areas of risk with information about prevention (*on-going* and *in progress*)		
Educate School Children			▪ Design and implement school education programs in collaboration with local vector control agencies so that even school children know about Lyme disease ▪ Encourage tick checks so that they will be conducted routinely by the public in high risk areas ▪ Design educational stickers for the general public and school-age children			
Risk Assessment	▪ Form working group on *Borrelia* diversity (done!)	▪ Conduct tick surveillance in select regions of California (*on-going)* ▪ Provide surveillance data and report to public as part of a public education program • Encourage ongoing research of infectivities in reservoir/sentinel animals (*on-going*) ▪ Create new detailed database of reported cases, including all cases whether they fit CDC criteria or not (*in progress*) ▪ Target select physicians to encourage/ facilitate their Lyme disease reporting)	• Encourage tick-testing by public health labs	▪ Contact local vector control districts and academics to obtain local data on tick abundance and infectivity rates; compile data into report (include map) and put on web site. ▪ Encourage and facilitate local vector control districts to conduct nymphal and adult tick surveillance; provide consultation as needed. .	▪ Encourage tick studies in every county showing nymphal infectivity rates. ▪ Initiate efforts to add laboratory reporting of Lyme disease tests	
Disease Prevention		▪ Enhance funding for LD Education ▪ Increase awareness such that legislative funding is made available for LD research			▪ Assess public knowledge on tick- borne diseases and tick control (via California Behavioral Risk Factor Study).	